Arand Software Overview

By Philip J. Howell
Brown University
Geological Sciences, Box 1846
Providence, RI 02912 USA
Philip_Howell@brown.edu

This documentation offers a brief description of each program in the Arand package for the Macintosh. Refer to the Arand Software Notes documentation and the individual user's guides for more information. The programs accept ASCII text files as input, including exported tab-delimited text files from many software packages such as Excel, KaleidaGraph, and others. All program output files are tab-delimited and easily imported to database and spreadsheet packages.

Ager assigns age to depth and as many as 6 related variables by interpolating between ages associated with specific depths in an age model. The program requires two input files. One input file contains depth and the related data variables. This file may be as large as 15000 samples. If applicable, code any missing data values in this file as -9999. An age model containing the depth-age relationships is the second input file. It may not have more than 7500 assignments. The output file from Ager contains depth, interpolated age, and the variables from the data file. Ager requires 2MB RAM to execute.

Timer interpolates Ager output, or any input file with age and as many as 6 related variables. The input (and output) data may not exceed 15000 samples. If any input variables have missing entries, code the missing data values as -9999. The user provides the starting time value and time step (Δt) for the output. The interpolated output file is a time series containing age and the related variables. Timer requires 1.5MB RAM to execute.

Interp is an interpolation program requiring two input files. One file contains x-array values to which the program assigns interpolated y-values. The other file contains (x,y) pairings used for the interpolation process. Unlike an age model, y-values in the (x,y) pairs may remain the same, decrease, or increase. The single x-array may be as large as 15000 samples and the (x,y) pairings as large as 20000 pairs. In the output file, -9999 is assigned to y-values that can not be properly interpolated due to boundary conditions. Interp requires 1.5MB RAM to execute.

Spectral performs spectral analysis on a time series with a constant Δt. The analysis may be applied to the entire series, or in an iterative fashion on portions of the data. Only the data variable is needed in the input file. The length of a single analysis may not exceed 15000 points and missing data must be coded as -9999. Graphing options offer 4 different plots. Analysis output may also be written to disk. The iterative feature offers an examination of spectral density changes. The program will calculate as many as 60 iterations. For example, given a 5000 sample series with a Δt of 2, choose an analysis of 2000 samples with an increment of 1000 samples. If the series starts at 0, an analysis is performed at time ranges of 0-4000, 2000-6000, 4000-8000, and 6000-10000. There are 2 output files in the iterative mode. One contains spectral density at every frequency for all iterations, similar to the output in the non-iterative mode. The other file contains spectral density and percentage of spectral density within the bandwidth for each user-provided period for all iterations. Spectral will analyze additional time series, but only one series is kept in memory at a time. Spectral requires 1.5MB RAM to execute.

Crospec performs cross-spectral analysis on two time series, each with a constant Δt. The analysis may be applied to the entire series, or in an iterative fashion on portions of the data. Only the data variable is needed in the input files. The length of a single analysis may not exceed 15000 points and missing data must be coded as -9999. Graphing options offer 6 different plots. Analysis output may also be written to disk. The iterative feature offers an examination of spectral density changes. For example, given two 5000 sample series with a Δt of 2, the user might choose an analysis of 2000 samples with an increment at every 1000th sample. If the series starts at 0, an

analysis is performed at time ranges of 0-4000, 2000-6000, 4000-8000, and 6000-10000. For every analysis segment, the iterative output file contains coherency, phase, and phase error for the three periods closest to the user-provided periods. This allows the user to examine changes in coherency and phase at chosen periods over the length of the series. Crospec will analyze additional time series, but only two series are kept in memory at a time. Crospec requires 2MB RAM to execute.

Filter creates bandpass, high pass, and low pass filters. Multiple filters may be made per program execution. The program will plot each filter and write the filter weights to a file. The output is useful in conjunction with the Smooth program. Filter requires 500K RAM to execute.

Smooth applies Filter output to a time series. Both files must have the same Δt. The time series, containing age and a data variable, may be as large as 15000 samples. No missing data is allowed. The program plots both the original and smoothed data. It also creates output containing the smoothed data. Smooth will read and analyze additional time series and/or filters, but only one series and one filter will be kept in memory at a time. Smooth requires 1.5MB RAM to execute.

Hilbert performs a Hilbert transform. Output from Smooth is suggested as input for this program since it works best on data of only one frequency. The input data may be as large as 15000 samples. Only the data column, not time, is required for the input file. The user provides the starting time value and the time step (Δt) of the input data. The output file is a time series containing time, amplitude, and phase values. Phase is provided in the -180 to 180 range, as well as the 0 to 360 range. Hilbert requires 1.5MB RAM to execute.

Ager User's Guide

Ager assigns age to depth and as many as 6 related variables by interpolating between ages associated with specific depths in an age model. The program requires two input files. One input file contains depth and the related data variables. This file may be as large as 15000 samples. If applicable, code any missing data values in this file as -9999. An age model containing the depth-age relationships is the second input file. It may not have more than 7500 assignments. The output file from Ager contains depth, interpolated age, and the variables from the data file. Ager requires 2MB RAM to execute.

File Menu:

Open Data File: Choose this menu item to open the file containing depth and the data variables. The file is opened using a standard Macintosh dialog box. Next, the Ager Data File Info dialog box appears, explained below, for information related to the data file.

***Ager Data File Info* dialog box:**

Input data file source: Pick the data file source from this popup menu as explained in the Arand Software Notes documentation.

Number of variables: Pick a number from this popup menu corresponding to the number of variables in the input file. Note that although depth is required in the input file, depth is not considered a variable. Do not count depth when picking a number from this menu.

OK: Click here when the correct information is provided in the dialog box. This enables the Open Age Model item in the File menu, allowing that menu choice to be used next.

Cancel: Click this button to cancel the dialog box and return to the File menu.

End of *Ager Data File Info* dialog box options.

Open Age Model: Choose this menu item to open the file containing the depth-age assignments. The file is opened using a standard Macintosh dialog box. Next, the Age Model File Info dialog box appears, explained below, for information related to the age model.

***Age Model File Info* dialog box:**

Age model source: Pick the age model source from this popup menu as explained in the Arand Software Notes documentation.

Run AGER: Click this button when the correct age model source is provided in the dialog box. Next, a standard Macintosh dialog box appears. Use that dialog box to save the output file. The output file is created. Program execution ends.

Cancel: Click this button to cancel the dialog box and return to the File menu.

End of *Age Model File Info* dialog box options.

Quit Ager: If needed, choose this menu item to quit the program.

Timer User's Guide

Timer interpolates Ager output, or any input file with age and as many as 6 related variables. The input (and output) data may not exceed 15000 samples. If any input variables have missing entries, code the missing data values as -9999. The user provides the starting time value and time step (Δt) for the output. The interpolated output file is a time series containing age and the related variables. Timer requires 1.5MB RAM to execute.

File Menu:

Open Data File: Choose this menu item to open the file containing age and the data variables. The file is opened using a standard Macintosh dialog box. Next, the Timer Input List dialog box appears. This dialog box is explained below.

***Timer Input List* dialog box:**

Input data file source: Pick the data file source from this popup menu. A special menu option exists to use Ager output. This option, Ager Program Output, automatically skips the depth column when reading data from the Ager output file. The other data file sources are explained in the Arand Software Notes documentation.

Number of variables: Pick a number from this popup menu corresponding to the number of variables in the input file. Note that although age is required in the input file, age is not considered a variable. Do not count age when picking a number from this menu.

Starting time: Enter the desired starting time for the output data. Note that this value does not have to be the same starting time as the input data.

Δt: Enter the desired time step (Δt) for the output data.

Run TIMER: Click this button when the correct information is provided in the dialog box. Next, a standard Macintosh dialog box appears. Use that dialog box to save the output file. The output file is created. Program execution ends.

Cancel: Click to cancel the dialog box and return to the main menu structure.

Save Settings As: Click to save settings to a file other than the default file. Refer to the Arand Software Notes documentation for a full explanation of this option.

End of *Timer Input List* dialog box options.

Quit Timer: If needed, choose this menu item to quit the program.

Special Menu:

Load Settings: Choose this item to load settings previously saved in a file other than the default file. Refer to the Arand Software Notes for a full explanation of this option.

Interp User's Guide

Interp is an interpolation program requiring two input files. One file contains x-array values to which the program assigns interpolated y-values. The other file contains (x,y) pairings used for the interpolation process. Unlike an age model, y-values in the (x,y) pairs may remain the same, decrease, or increase. The single x-array may be as large as 15000 samples and the (x,y) pairings as large as 20000 pairs. In the output file, -9999 is assigned to y-values that can not be properly interpolated due to boundary conditions. Interp requires 1.5MB RAM to execute.

File Menu:

Open X-Y File: Choose this menu item to open the (x,y) pairs file used for the interpolation process. The file is opened using a standard Macintosh dialog box. Next, the Interp X-Y File dialog box appears for information related to the (x,y) file. This dialog box is explained below.

***Interp X-Y File* dialog box:**

Source for (x,y) data: Pick the file source from this popup menu as explained in the Arand Software Notes documentation.

OK: Click here when the correct (x,y) file source is provided in the dialog box. This enables the Open X File item in the File menu, allowing that menu choice to be used next.

Cancel: Click this button to cancel the dialog box and return to the File menu.

End of *Interp X-Y File* dialog box options.

Open X File: Choose this to open the x-array file, i.e., the x-values to which the program assigns interpolated y-values. The file is opened using a standard Macintosh dialog box. Next, the Interp X File dialog box appears, explained below, for information related to the x-array file.

***Interp X File* dialog box:**

Source for (x) data: Pick the file source from this popup menu as explained in the Arand Software Notes documentation.

Run INTERP: Click this button when the correct x-array file source is provided in the dialog box. Next, a standard Macintosh dialog box appears. Use that dialog box to save the output file. The output file is created. Program execution ends.

Cancel: Click this button to cancel the dialog box and return to the File menu.

End of *Interp X File* dialog box options.

Quit Interp: If needed, choose this menu item to quit the program.

Spectral User's Guide

Spectral performs spectral analysis on a time series with a constant Δt. The analysis may be applied to the entire series, or in an iterative fashion on portions of the data. Only the data variable is needed in the input file. The length of a single analysis may not exceed 15000 points and missing data must be coded as -9999. Graphing options offer 4 different plots. Analysis output may also be written to disk. The iterative feature offers an examination of spectral density changes. The program will calculate as many as 60 iterations. For example, given a 5000 sample series with a Δt of 2, choose an analysis of 2000 samples with an increment of 1000 samples. If the series starts at 0, an analysis is performed at time ranges of 0-4000, 2000-6000, 4000-8000, and 6000-10000. There are 2 output files in the iterative mode. One contains spectral density at every frequency for all iterations, similar to the output in the non-iterative mode. The other file contains spectral density and percentage of spectral density within the bandwidth for each user-provided period for all iterations. Spectral will analyze additional time series, but only one series is kept in memory at a time. Spectral requires 1.5MB RAM to execute.

File Menu:

Open Data File: Choose this to open a time series file. The file should only contain the data variable, not time, unless it is being read in with a format statement. The file is opened using a standard Macintosh dialog box. Next, the Spectral Data File dialog box appears. This dialog box only requires the user to choose the Data file source as explained in Arand Software Notes.

Input Parameters: Once a file is open, choose this to display the Spectral Input List dialog for analysis information. (The Iterative Spectral Input List dialog is used if Iterative Feature is checked in the Special menu.) Both dialog boxes are explained later in this documentation.

Output Spectral Data: Use this to write the spectral output to disk. A standard Macintosh dialog box appears for saving the output file. Two output files are created in iterative mode.

Quit Spectral: Choose this menu item to quit the program.

Graphs Menu:

The Plot Linear-Linear, Plot Log-Log, Plot Linear-Log, and Plot Freq x Spec Den options are available after choosing Input Parameters in the File menu. The first option plots frequency versus spectral density on linear axes. The second plots the same data on log axes. The third plots frequency on a linear axis versus spectral density on a log axis. The fourth choice plots frequency on a log axis versus frequency multiplied by spectral density on a linear axis. The Axis Limits dialog box, explained below, appears for each plot option.

***Axis Limits* dialog box:**

X-Axis and Y-Axis Min and Max: Change the defaults to view different axis ranges.

Plot title: Enter a title to describe the plot. The maximum is 80 characters.

End of *Axis Limits* dialog box options.

Data Marker: If checked, a "+" marks each data point. Otherwise, a smooth curve is drawn.

Copy Graph: Choose this to copy a plot to the clipboard. Multiple plots may be pasted in another application while using the program, but the clipboard only holds one plot per copy operation.

Print Graph: Choose this to print a plot. Pick landscape orientation in the Page Setup dialog.

Special Menu:

Load Settings and Save Settings As options are explained fully in Arand Software Notes.

Iterative Feature: Check this item to activate the iterative spectral analysis mode. The default mode, a full series spectral analysis, is performed when this item is not checked.

Next Iteration: Use this item to plot the next analysis when the program is in the iterative mode. This option becomes available after one of the four plots is chosen in the Graphs menu.

***Spectral Input List* dialog box:**

Function choice: Choose autocorrelation or autocovariance from this popup menu.

Detrend option: This subtracts the mean, or applies a full linear detrend to the data.

Confidence level: Pick a confidence interval level of 80% or 95%.

Δt: Enter the sample interval (Δt) of the time series data.

Pre-whitening: Enter a pre-whitening constant, or enter 0 to skip this feature.

Starting frequency: Enter the starting frequency for the spectral analysis.

Frequencies: Enter the number of frequencies to be calculated. This is usually 101, but the maximum allowed is 1000.

Number of lags: Enter the number of lags for the analysis. The maximum is 7500.

Final frequency: This is the last frequency calculated in the analysis. The value entered here will be the final frequency plotted on the x-axis. The highest frequency that can be resolved is the Nyquist frequency ($1/2\Delta t$).

***Iterative Spectral Input List* dialog box:**

The same options exist as in the Spectral Input List dialog box, but with the additions below.

Starting time: Enter the starting time of the input data series.

Samples: Enter the number of samples per iteration. The maximum is 15000. In the example above, this value is 2000.

Sample increment: Each analysis in the iterative mode increments further into the data by the number of samples entered for this value. In the example above, this value is 1000.

Enter up to four periods for output: Enter as many as 4 periods in descending order. Detailed spectral density information on these periods is provided in the second iterative output file. If 0 is entered for all 4 periods, then the second output file will not be created.

The usual OK and Cancel buttons are in the above dialog boxes to return to the menu structure.

Crospec User's Guide

Crospec performs cross-spectral analysis on two time series, each with a constant Δt. The analysis may be applied to the entire series, or in an iterative fashion on portions of the data. Only the data variable is needed in the input files. The length of a single analysis may not exceed 15000 points and missing data must be coded as -9999. Graphing options offer 6 different plots. Analysis output may also be written to disk. The iterative feature offers an examination of spectral density changes. For example, given two 5000 sample series with a Δt of 2, the user might choose an analysis of 2000 samples with an increment at every 1000th sample. If the series starts at 0, an analysis is performed at time ranges of 0-4000, 2000-6000, 4000-8000, and 6000-10000. For every analysis segment, the iterative output file contains coherency, phase, and phase error for the three periods closest to the user-provided periods. This allows the user to examine changes in coherency and phase at chosen periods over the length of the series. Crospec will analyze additional time series, but only two series are kept in memory at a time. Crospec requires 2MB RAM to execute.

File Menu:

Open 1st Series and Open 2nd Series are used to open the two time series files. Each file should only contain the data variable, not time, unless it is being read in with a format statement. The files are opened using a standard Macintosh dialog box. Next, the Data File Info dialog box appears. That dialog box is explained below.

***Data File Info* dialog box:**

Data file source: Pick the data file source as explained in Arand Software Notes.

Starting time frame: Pick past, present, or future as the time frame for the series.

Starting time value: Enter the starting time for the time series.

Δt: Enter the sample interval (Δt) of the time series data.

Legend title: Enter a plot legend, no longer than 10 characters, to identify the series.

End of *Data File Info* dialog box options.

Input Parameters: Once both files are open, choose this to display the Crospec Input List dialog box for analysis information. (The Iterative Crospec Input List dialog is used if Iterative Feature is checked in the Special menu.) Both dialogs are explained later in this documentation.

Output Crospec Data: Use this to write the output file to disk. A standard Macintosh dialog box appears for saving the file. This option is available in the iterative mode after the final iteration.

Quit Crospec: Choose this menu item to quit the program.

Graphs Menu:

Plot 1st Time Series, Plot 2nd Time Series, Plot Both Time Series, Plot Cross-correlation, Plot Coherency, and Plot Phase are available after choosing Input Parameters in the File menu. The first three options plot the data (with the Detrend option applied) versus time. The fourth plots the cross-correlation function. The fifth plots coherency, along with the spectra of both series. The sixth choice plots phase angle. The Axis Limits dialog box appears for each option. This dialog box contains X-Axis and Y-Axis Min and Max fields to change defaults, allowing a view of different axis ranges. A Plot title field is included to describe the plot. Maximum is 80 characters.

Data Marker: If checked, a "+" marks each data point. Otherwise, a smooth curve is drawn.

Show All Coherency & Phase: When checked, this item shows all coherency and phase points on the plots. Otherwise, points are only shown when spectral density exceeds 1% of the maximum.

Copy Graph: Choose this to copy a plot to the clipboard. Multiple plots may be pasted in another application while using the program, but the clipboard only holds one plot per copy operation.

Print Graph: Choose this to print a plot. Pick landscape orientation in the Page Setup dialog.

Special Menu:

Load Settings and Save Settings As options are explained fully in Arand Software Notes.

Iterative Feature: Check this item to activate the iterative cross-spectral analysis mode. The default mode, a full series cross-spectral analysis, is performed when this item is not checked.

Next Iteration: Use this item to plot the next analysis when the program is in the iterative mode. This option becomes available after one of the five plots is chosen in the Graphs menu.

***Crospec Input List* dialog box:**

Confidence level: Pick a confidence interval level of 80% or 95%.

Detrend option: This subtracts the mean, or applies a full linear detrend to the data.

Starting time frame: Pick past, present, or future as the time frame for the analysis.

Starting time: Enter the starting time value for the cross-spectral analysis.

Δt: Enter the sample interval (Δt) of the cross-spectral analysis.

Number of lags: Enter the number of lags for the analysis. The maximum is 7500.

Number of samples: Enter the number of samples for the analysis. Maximum is 15000.

Final frequency value to be calculated in the analysis: This is the last frequency calculated by the program. There will be a total of 101 frequencies, starting at 0. The value entered here will be the final frequency plotted on the x-axis. The highest frequency that can be resolved is the Nyquist frequency ($1/2\Delta t$).

***Iterative Crospec Input List* dialog box:**

The same options exist as in the Crospec Input List dialog box, but with the additions below.

Samples per analysis: This replaces Number of samples in the Crospec Input List dialog. Enter the number of samples per iteration. Maximum is 15000. This value is 2000 in the example.

Total samples: Enter the total number of samples. In the example above, this value is 5000.

Analysis increment: Each analysis in the iterative mode increments further into the data by the number of samples entered for this value. In the example above, this value is 1000.

Enter up to 4 output periods: Use descending order. The output examines these periods.

Filter User's Guide

Filter creates bandpass, high pass, and low pass filters. Multiple filters may be made per program execution. The program will plot each filter and write the filter weights to a file. The output is useful in conjunction with the Smooth program. Filter requires 500K RAM to execute.

Filter Menu:

Filter Type: Check Bandpass, High Pass, or Low Pass from the sub-menu. Next, a Filter Input List dialog box appears. There are two possible dialog boxes. Each one is explained below.

***Filter Input List* dialog box for bandpass filters:**

Triangles: Enter the number of triangles to be used in the bandpass filter.

Central frequency*Δt: Enter the central frequency of the filter. Multiply this value by Δt. The range is 0.0 to 0.5 since the Nyquist value, 1/(2Δt), results in the 0.5 maximum.

Bandwidth*Δt: Enter the bandwidth of the filter. Remember to multiply this value by Δt.

End of *Filter Input List* dialog box options for bandpass filters.

***Filter Input List* dialog box for high or low pass filters:**

Taper choice: Pick a taper choice from this popup menu. The choices are Lanczos (Sine), Lanczos-Squared, Parzen (3rd Order), Triangular, and Tukey (Cosine).

Filter weights: Enter the number of filter weights for the high or low pass filter.

Freq of 1/2 amp*Δt: Enter the frequency of half amplitude. Multiply this value by Δt.

End of *Filter Input List* dialog box options for high or low pass filters.

Output Filter Data: Use this option to write the filter weights to disk. A standard Macintosh dialog box appears for saving the output file.

Quit Filter: Choose this menu item to quit the program.

Graphs Menu:

Plot Filter: This plots the filter. The Axis Limits dialog box appears. It is explained below.

***Axis Limits* dialog box:**

X-Axis and Y-Axis Min and Max: Change the defaults to view different axis ranges.

Plot title: Enter a title to describe the filter plot. The maximum is 80 characters.

End of *Axis Limits* dialog box options.

Data Marker: If checked, a "+" marks each data point. Otherwise, a smooth curve is drawn.

Copy Graph: Choose this to copy a plot to the clipboard. Multiple plots may be pasted in another application while using the Filter program, but the clipboard only holds one plot per copy operation.

Print Graph: Choose this to print a plot. Pick landscape orientation in the Page Setup dialog.

Special Menu:

Load Settings and Save Settings As options are explained fully in Arand Software Notes.

Smooth User's Guide

Smooth applies Filter output to a time series. Both files must have the same Δt. The time series, containing age and a data variable, may be as large as 15000 samples. No missing data is allowed. The program plots both the original and smoothed data. It also creates output containing the smoothed data. Smooth will read and analyze additional time series and/or filters, but only one series and one filter will be kept in memory at a time. Smooth requires 1.5MB RAM to execute.

File Menu:

Open Data File: Choose this menu item to open a time series file containing age and a data variable. The file is opened using a standard Macintosh dialog box. Next, the Smooth Data File dialog box appears. This dialog box only requires the user to choose the Data file source as explained in Arand Software Notes.

Open Filter File: Choose this to open a filter file. A standard Macintosh dialog box is used.

Output Smoothed Data: Use this option to write the smoothed data to disk. A standard Macintosh dialog box appears for saving the output file.

Quit Smooth: Choose this menu item to quit the program.

Graphs Menu:

Plot Input Data: Once the input data file is opened, this option will plot the data. The Axis Limits dialog box appears. It is explained below.

***Axis Limits* dialog box:**

X-Axis and Y-Axis Min and Max: Change the defaults to view different axis ranges.

Plot title: Enter a title to describe the plot. The maximum is 80 characters.

End of *Axis Limits* dialog box options.

Plot Smoothed Data: Once the data is smoothed with a filter, this option plots the results. Again, as with plotting the input data, the Axis Limits dialog box (explained above) appears.

Plot Both Curves: Once the data is smoothed with a filter, this option plots both the original and smoothed data together. As with the other plot choices above, the Axis Limits dialog box appears.

Data Marker: If checked, a "+" marks each data point. Otherwise, a smooth curve is drawn.

Copy Graph: Choose this to copy a plot to the clipboard. Multiple plots may be pasted in another application while using the program, but the clipboard only holds one plot per copy operation.

Print Graph: Choose this to print a plot. Pick landscape orientation in the Page Setup dialog.

Hilbert User's Guide

This program performs a Hilbert transform. Output from Smooth is suggested as input for Hilbert since the program works best on data of only one frequency. The input data may be as large as 15000 samples. Only the data column, not time, is required for the input file. The user provides the starting time value and the time step (Δt) of the input data. The output file is a time series containing time, amplitude, and phase values. Phase is provided in the -180 to 180 range, as well as the 0 to 360 range. Hilbert requires 1.5MB RAM to execute.

File Menu:

Open Data File: Choose this menu item to open the file containing the data variable. The file is opened using a standard Macintosh dialog box. Next, the Hilbert Input List dialog box appears. It is explained below.

***Hilbert Input List* dialog box:**

Input data file source: Pick the data file source from this popup menu. A special menu option exists to use Smooth output. This option, Smooth Program Output, automatically skips the extra lines and time column in the Smooth output file. The other data file sources are explained in the Arand Software Notes documentation.

Starting time: Enter the starting time of the input data.

Δt: Enter the time step (Δt) of the input data.

Run HILBERT: Click this button when the correct information is provided in the dialog box. Next, a standard Macintosh dialog box appears. Use that dialog box to save the output file. The output file is created. Program execution ends.

Cancel: Click to cancel the dialog box and return to the main menu structure.

Save Settings As: Only click this button to save settings to a file other than the default file. Refer to the Arand Software Notes for a full explanation of this option.

End of *Hilbert Input List* dialog box.

Quit Hilbert: If needed, choose this menu item to quit the program.

Special Menu:

Load Settings: Choose this item to load settings previously saved in a file other than the default file. Refer to the Arand Software Notes for a full explanation of this option.

Arand Software Notes

This documentation outlines general topics regarding the Arand package for the Macintosh. The Arand programs were designed using Absoft Fortran, ResEdit and customized versions of Fortran Utilities toolbox routines. The applications are MultiFinder and Desk Accessory friendly. They will execute and read/write files from any disk, including networked volumes, providing the user has proper access permission. However, the applications will not recognize data on PC formatted diskettes.

Minimum Requirements

These applications will run on any Power Macintosh, including G3 and G4 models. The programs operate best under System 8, or higher. The software is not maintained for older Macintosh computers. However, applications for Quadras will be made available by request.

The programs should run without any special installation. If dialog boxes appear blank during execution, increase the memory allocated to the application. If the programs still do not work, restart your computer through the Extensions Manager by choosing Mac OS All or Mac OS Base to eliminate conflicts with any special Control Panels or Extensions. Known conflicts include Norton Utilities Directory Assistance II and the NoballoonMenu extension.

Data File Sources

Data from spreadsheet packages, such as Excel, must be exported as tab-delimited text for the Arand software. Since exported text files vary from product to product, the Arand programs require that the file source be specified for the input data. The choices, explained below, are CricketGraph 1.3.2 Text, DeltaGraph Text, Excel Text, KaleidaGraph Text, Text -> List Directed, and Text -> Input Format.

Cricket Graph 1.3.2 tab-delimited text files contain three extra lines. The file starts with two extra lines, including column names. An additional line is at the end of the file. The Arand programs read these files correctly if the user indicates the data is a text file from this old version of Cricket Graph by choosing the Cricket Graph 1.3.2 Text menu option.

CA-Cricket Graph III 1.5 corrected the Cricket Graph 1.3.2 problem. In the newer version, if tab-delimited text is exported with column names, the result is identical to the KaleidaGraph tab-delimited export explained below. Therefore, use the KaleidaGraph Text option in this case. However, no special treatment is needed if tab-delimited text from CA-Cricket Graph III is exported without column titles. In this case, use the Text -> List Directed menu option.

KaleidaGraph tab-delimited text files include column names at the start of the file. Use the KaleidaGraph Text menu option to handle this situation.

Spyglass Plot, like KaleidaGraph, includes column names when exporting tab-delimited data. (In addition, an extra end-of-line character, which is not a factor, is at the end of the file.) The Spyglass Plot situation is handled by using the KaleidaGraph Text menu option.

StatView creates a standard tab-delimited text file if the user does not export column titles. In this case, use the Text -> List Directed menu option. If column titles are exported from StatView along with the tab-delimited data, then use the KaleidaGraph Text menu option.

Excel exports tab-delimited text files without an end-of-line character on the last line of the file. Use the Excel Text menu option to correct this problem. If the file is exported with column titles on the first line, use the DeltaGraph Text option explained below.

DeltaGraph Pro3 text files do not have an end-of-line character on the last line, either. In addition, column titles are exported. Handle this case with the DeltaGraph Text menu option.

If the input file does not fit any case above, try either the list-directed method or a format statement. The Text -> List Directed option expects that only the data columns needed by the program reside in the text file. When a text file is not tab-delimited and contains data columns to be skipped, use the Text -> Input Format menu option. This menu option provides a dialog box with an entry field for the format. A maximum of 80 characters is allowed for the format statement.

Settings Files

Each program creates a default file containing setting in the Preferences folder, inside the System Folder. (If the program can not access that location, then default settings internal to the program are used.) This file is updated after every program execution. In place of the default file, each program (except Ager and Interp) allows the user to save and load custom settings. For example, in Filter, it is useful to save individual settings for each filter by using the Save Settings As feature. This makes changes easy if future adjustments to the filters are needed since these settings can be accessed using the Load Settings feature.

The Save Settings As feature allows the user to save settings to a file other than the default file. When the user picks this option, a standard Macintosh dialog box appears for saving the file. The new custom settings file is updated when program execution ends. There is no need to use Save Settings As to update default settings because that file is updated automatically when no custom settings are in use.

The Load Settings feature allows the user to load previously saved settings. The file is opened using a standard Macintosh dialog box. However, there is no need to use the Load Settings feature to load default settings since they load automatically upon program execution.

Graphics

For best results when printing plots, change the paper orientation to landscape in the Page Setup dialog box. Otherwise, unless page reduction is used, the plot will be truncated.

Only one plot will be held in the clipboard per copy operation. However, it is possible to paste multiple plots to another application during program execution. First, copy one plot to the clipboard. Next, paste it in the other application. Then, return to the Arand program and repeat the copy operation for the next plot.

Written by Philip J. Howell (1/95)
Revised: March, 2001